UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,656	12/30/2003	James Kenneth Aragones	RD28217-4	1655

41838   7590   09/25/2006

GENERAL ELECTRIC COMPANY (PCPI)
C/O FLETCHER YODER
P. O. BOX 692289
HOUSTON, TX 77269-2289

EXAMINER
THANGAVELU, KANDASAMY

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 09/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/707,656	ARAGONES, JAMES KENNETH
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 December 2003_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-33_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1,3,4,6-9,11,12,14,15,17-20,22,23,25,26,28-31 and 33_ is/are rejected.

7)☒ Claim(s) _2,5,10,13,16,21,24,27 and 32_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _30 December 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _June 23, 2004_.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-33 of the application have been examined.

Information Disclosure Statement

2.   Acknowledgment is made of the information disclosure statements filed on June 23, 2004 together with a list of patents and papers. The patents and papers have been considered.

Drawings

3.   The drawings submitted on December 30, 2003 are accepted.

Specification

4.   The disclosure is objected to because of the following informalities:

Page 2, Para 0003, Line 21, "operational parameters the baseline model" appears to be incorrect and it appears that it should be "operational parameters of the baseline model".

Page 4, Para 0006, Line 14, "Estimate trends for each parameter" appears to be incorrect and it appears that it should be "Estimated trends for each parameter".

Page 20, Para 0043, Lines 6-7, "by using a cleaner data set" appears to be incorrect and it appears that it should be "by using a cleaned data set".

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

6.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

7.   Claims 1, 3, 4, 8, 9, 11, 12, 14, 15, 19,20, 22, 23, 25, 26, 30, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aragones et al.** (U.S. Patent 6,832,205) in view of **Richman et al.** (U.S. Patent 6,631,384).

7.1   **Aragones et al.** teaches system and method for automatically predicting the timing and

costs of service events in a life cycle of a product. Specifically, as per claim 1, **Aragones et al.**

teaches a system for quantifying baseline model quality (CL6, L15-32; CL10, L33-35; CL4, L60

to CL5, L4), comprising:

an engine service database containing engine data (Abstract, L3-4; and L7-10; Fig. 3, Items

52 and 54; CL2, L17-24; CL1, L33-37; CL3, L67 to CL4, L3);

a preprocessor for processing the engine data into a predetermined format (Fig. 2, Item 32;

Fig. 3, Item 52; CL4, L5-7; and L10-12); and

an engine baseline modeling component that builds an engine baseline model for each of

the plurality of groups using a regression analysis (CL4, L41-46; and L50-56), wherein the

regression analysis relates engine performance variables as a function of engine operating

conditions (CL5, L34-52).

Aragones et al. does not expressly teach that the preprocessor includes a data segmenting

component that segments the engine data into a plurality of groups based upon specific engines and

further based upon specific time periods during which each data element was measured. **Richman**

et al. teaches that the preprocessor includes a data segmenting component that segments the engine

data into a plurality of groups based upon specific engines (CL2, L48-54; CL5, L27-30; CL6, L12-

14; CL13, L34-37), and further based upon specific time periods during which each data element

was measured (CL2, L55-57; CL6, L14-19; CL13, L42-46). It would have been obvious to one

of ordinary skill in the art at the time of Applicant's invention to modify the system of **Aragones**

et al. with the system of **Richman et al.** that included the preprocessor including a data

segmenting component that segmented the engine data into a plurality of groups based upon

specific engines and further based upon specific time periods during which each data element was

measured, because that would allow the analysis component to identify chronological trends for

one or more individual engines (CL2, L42-45); permits analysis of a group of peer aircraft

engines (CL13, L34-36); to identify a statistically high number of events for one or more engines

within a designated time period (CL2, L55-57); and perform performance analysis for the same

time period of operation (CL13, L42-46).

7.2   As per claim 3, **Aragones et al.** and **Richman et al.** teach the system of claim 1.

Aragones et al. does not expressly teach that the segmenting component segments the engine data

into a plurality of groups throughout discrete time ranges. **Richman et al.** teaches that the

segmenting component segments the engine data into a plurality of groups throughout discrete time

ranges (CL2, L55-57; CL6, L14-19; CL13, L42-46).

7.3   As per claim 4, **Aragones et al.** and **Richman et al.** teach the system of claim 1.

Aragones et al. teaches that the engine baseline modeling component generates a set of estimated

regression parameters based upon the regression analysis, wherein each set of estimated regression

parameters are representative of a baseline model (CL4, L41-46; and L50-56).

  Aragones et al. does not expressly teach that the engine baseline modeling component

generates parameters for each of the plurality of groups and a baseline model for each group.

Richman et al. teaches that the engine baseline modeling component generates parameters for each

of the plurality of groups and a baseline model for each group (CL2, L48-54; CL5, L27-30; CL6, L12-14; CL13, L34-37).

7.4   As per claim 8, **Aragones et al.** and **Richman et al.** teach the system of claim 1. **Aragones et al.** teaches that the preprocessor comprises a data acquisition component that extract engine data from the engine services database (Abstract, L3-4; and L7-10; Fig. 3, Items 52 and 54; CL2, L17-24; CL1, L33-37; CL3, L67 to CL4, L3).

7.5   As per claim 9, **Aragones et al.** and **Richman et al.** teach the system of claim 1. **Aragones et al.** teaches that the engine baseline modeling component comprises a metric component that validates the engine baseline model (CL6, L15-32; CL10, L33-35; CL4, L60 to CL5, L4).

7.6   As per claim 11, **Aragones et al.** and **Richman et al.** teach the system of claim 1. **Aragones et al.** teaches a model diagnostics component that evaluates performance of the engine baseline model (CL6, L15-32; CL10, L33-35; CL4, L60 to CL5, L4).

7.7   As per Claims 12, 14, 15, 19,20, 22, 23, 25, 26, 30, 31 and 33, these are rejected based on the same reasoning as Claims 1, 3, 4, 8, 9, 11, supra. Claims 12, 14, 15, 19,20, 22, 23, 25, 26, 30, 31 and 33 are method and computer readable medium claims reciting the same limitations as Claims 1, 3, 4, 8, 9, 11 as taught throughout by **Aragones et al.** and **Richman et al.**

8.   Claims 6, 17 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Aragones et al. (U.S. Patent 6,832,205) in view of **Richman et al.** (U.S. Patent 6,631,384), and

further in view of **Cece et al.** (U.S. Patent 6,591,182).

8.1   As per claim 6, **Aragones et al.** and **Richman et al.** teach the system of claim 1.

Aragones et al. and **Richman et al.** do not expressly teach means for identifying fluctuations in

trends for each estimated regression parameter representative of engine faults; means for evaluating

trends having identified fluctuations; and means for identifying parameter estimate trends relating to

baseline trend shifts. **Cece et al.** teaches means for identifying fluctuations in trends for each

estimated regression parameter representative of engine faults (Abstract, L1-5; CL1, L7-10; CL1,

L25-29; CL4, L13-19); means for evaluating trends having identified fluctuations; and means for

identifying parameter estimate trends relating to baseline trend shifts (CL1, L7-10; CL1, L52-54;

CL1, L25-29; CL4, L13-19). It would have been obvious to one of ordinary skill in the art at the

time of Applicant's invention to modify the system of **Aragones et al.** and **Richman et al.** with

the system of **Cece et al.** that included means for identifying fluctuations in trends for each

estimated regression parameter representative of engine faults; means for evaluating trends having

identified fluctuations; and means for identifying parameter estimate trends relating to baseline trend

shifts, because that would allow evaluating performance shifts identified during a diagnostic

trend analysis of the aircraft engine and determining if the performance shift is actionable

(Abstract, L1-5).

8.2   As per Claims 17 and 28, these are rejected based on the same reasoning as Claim 6,

supra. Claims 17 and 28 are method and computer readable medium claims reciting the same

limitations as Claim 6, as taught throughout by **Aragones et al., Richman et al.** and **Cece et al.**

9.   Claims 7, 18 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Aragones et al. (U.S. Patent 6,832,205) in view of **Richman et al.** (U.S. Patent 6,631,384), and

further in view of **Cece et al.** (U.S. Patent 6,591,182) and **Gleeson et al.** (U.S. Patent 6,317,654).

9.1   As per claim 7, **Aragones et al., Richman et al.** and **Cece et al.** teach the system of

claim 6. **Aragones et al., Richman et al.** and **Cece et al.** do not expressly teach that the

preprocessor maps engine data to an uncorrelated data set using a principal component analysis

technique t. **Gleeson et al.** teaches that the preprocessor maps engine data to an uncorrelated data

set using a principal component analysis technique (CL8, L11-20). It would have been obvious to

one of ordinary skill in the art at the time of Applicant's invention to modify the system of

Aragones et al., Richman et al. and **Cece et al.** with the system of **Gleeson et al.** that included

the preprocessor mapping engine data to an uncorrelated data set using a principal component

analysis technique, because that would provide a convenient method for data compression and

remove any co-linearity in the data (CL8, L15-18); and provide a statistical basis for selecting

significant performance patterns (CL8, L51-63).

9.2   As per Claims 18 and 29, these are rejected based on the same reasoning as Claim 7,

<u>supra.</u> Claims 18 and 29 are method and computer readable medium claims reciting the same

limitations as Claim 7, as taught throughout by **Aragones et al., Richman et al., Cece et al.** and

Gleeson et al.

Allowable Subject Matter

10.   Claims 2, 5, 10, 13, 16, 21, 24, 27 and 32 are objected to as being dependent upon a

rejected base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.
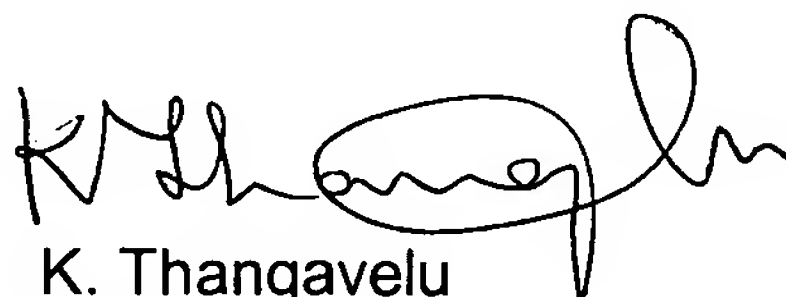
Conclusion

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

571-272-3717. The examiner can normally be reached on Monday through Friday from

8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
September 16, 2006